November 26, 1961

STAT

Mr. John Parangosky

[redacted]

Washington 24, D.C.

Dear John:

STAT

Subject: [redacted] Progress With
Type III Equipment

STAT

Enclosed is [redacted] latest progress report. As you can see, the development is proceeding in a satisfactory manner but is slightly behind on schedule.

His costs to date are in line and are approximately $30,000 at this date.

Best regards,

STAT

[redacted]

kb
Enclosure

20 November 1961

STAT

To:

From:

Subject: Report #8 Job 82 Type III Unit
C & J Equipment Co., P. O. #12356

Enclosure: (1) Management Report No. 8
(2) Graph of Thermal Test 15

1. Period of Report

This report covers work done through 20 November 1961.

2. Status and Schedule

In general, the job is running approximately 45 days late.

2.1 Thermal tests made during last period showed temperature gradients and hot spots within the optical path that should be reduced or eliminated. The test chamber instrumentation has been increased about 50% with the addition of heaters and thermocouples to better understand this problem. Part of the equipment related to optical performance has been insulated and a need determined for additional insulation, baffles, reflectors and heat sinks. Work is being done on the design of a new oblique drive motor mount to provide proper heat isolation and distribution. Thermal tests are continuing with operating conditions comparable to those of the vehicle.

Thermal test No. 15 has just been completed with very satisfactory results. The equipment was instrumented with approximately twenty thermocouples placed at critical positions within the optical path. The thermocouples were arranged in a manner to indicate "touch" temperatures, air temperatures and radiant heat sources.

The data gathered in this test confirmed that previously obtained and indicated the existence of only one severe "hot spot". This heat source is due to the oblique drive motor and the way it is mounted to the structure. This condition was previously recognized and a new mounting and heat dissipating system is being designed. Several other areas require insulation, baffles and reflectors or the utilization of heat sinks or radiators. None of these areas present any particular problems nor is any major problem anticipated.

A graph showing temperature curves at several significant points is enclosed. It is interesting and gratifying to note that (a) the temperature differentials are small, (b) that the temperature gradients are in the correct direction and (c) the slope of the temperature curves are essentially the same.

2.2 Performance requirements for all motors have been determined, specifications drawn up and all motors placed on order.

2.3 The film drive and film takeup gear trains have been modified to meet the new high speed requirements.

2.4 The servo controlled, temperature sensitive focus drive design is about complete and parts will be detailed and released for manufacture during the next period.

2.5 Oblique Drive System

A test fixture was initially built to prove out the new concept of electronic control for the acceleration, deceleration and positioning of the oblique drive motor. As was mentioned in paragraph 2.3 of our Report No. 7 dated 20 October 1961, we feel that this is a reliable concept. The test fixture is being modified to test a more powerful oblique drive motor that is necessary. The design data for the position cams and switches to complete the oblique drive system will be determined during the next period.

2.6 Oblique Drive Motor Delivery

The oblique drive motor which was ordered on a six weeks delivery schedule was originally promised to us on October 7, 1961. The

most recent delivery date, presented to us is December 4, 1961. This delay of almost two months is holding up the testing program for the oblique drive. Western Gear, the supplier of the motor is being expedited all possible on this small order (three units).

2.7 Vibration Isolators.

The vibration isolators for the Type III unit have been designed. They are very similar to the Type II isolators. There will be a passive oleo damping system that will attenuate the high frequency and beat frequency input from the vehicle as well as cushion shock loads. The vehicle attach fittings [redacted] will be an integral part of this isolation system. The design will be completed during the next period.

3. Program for the Coming Period.

The thermal tests to design necessary insulation baffles and heat sinks will be completed during this coming period. The servo controlled temperature sensitive focus drive will be detailed and released for manufacture.

The oblique drive system tests will be started upon the receipt of the oblique drive motor.

The film drive and film takeup system will be operated at the new high speed to investigate and determine problem areas that might arise. Corrective action will be taken should we find it advisable.

We will continue design and layout of structure modification to meet the space requirements of the vehicle.

The isolators and vehicle attach fittings will be detailed and released for manufacture.